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Research & Development

LITHOGRAPHY FOR ONLY $90,000

Page 44

VACUUM TECHNOLOGY Page 63

Bayard-Alpert gages measure new pressures

MANAGEMENT Page 87

Supervising veterans and clock watchers

R&D

CONTENTS

R&D BUSINESS

15 PURCHASING
Flat equipment growth forecast for next year.
COMPUTERS
Mainframes take center stage.
STRATEGIC PLANNING
Form alliances now or forfeit future, says IITRI's Jack Baranson.

16 SURVEY
Top 10 interests of worldwide R&D organizations.

NEWS

20 BINARY OPTICS
Can the U.S. exploit binary optics?

21 VACUUM ELECTRONICS
The world's smallest needle tip leads to new interest in vacuum tubes.
ENVIRONMENT
OTA says Superfund money is being wasted.

22 COMPUTER RENDERING
This computer-generated picture will warm your heart.

24 AVIATION
McDonnell.Douglas grounds propfan.

26 AEROSPACE
X designs put R&D into new planes.

32 MATERIALS
Chemists find a way to thin plastic mix and strengthen composites.

34 SATELLITES
Weather looks good for weather satellite.

36 AWARDS
Get your applications for the *R&D 100* and Lab of the Year Awards.
EDUCATION
British university offers degree in space science.
MATERIALS
New material allows tires to adapt to changing road conditions.

FEATURES

COMPUTER APPLICATION
44 Million-Dollar Lithography For Less than $90,000

Brian McIntyre and Rachelle Perman, Univ. of Rochester, and Barri Gold, GW Instruments
Combining a Macintosh PC and an SEM with graphics software creates a high-resolution laboratory lithography system that can perform many important microfabrication functions, without the high cost of electron-beam equipment.

SURFACE ANALYSIS
52 X Rays Provide New Surface Vision

Sean Brennan and Arthur Bienenstock, Stanford Synchrotron Radiation Laboratory
Grazing incidence x-ray scattering controls penetration depth to give a better picture of atomic surface structures. This nondestructive technique avoids the multiple-scattering problems associated with low-energy electron diffraction.

VACUUM TECHNOLOGY
65 New Controller Extends The Range of BA Ion Gages

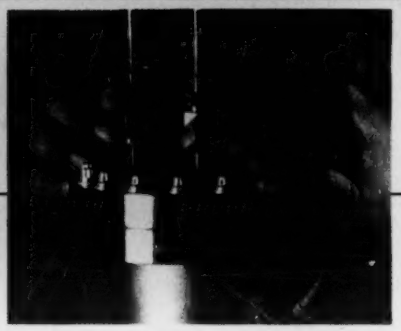
Ron Paitich, Terranova Scientific Inc.
A Bayard-Alpert gage with a wide-range controller can measure pressures throughout a semiconductor or optical process. By improving the processing of a BA gage's output signals, its use can extend the gage's upper pressure limit from 10^{-3} to 1 torr.

ON THE COVER
A high-resolution laboratory lithography system might be on your wish list. This one, shown with developer Brian McIntyre of the Univ. of Rochester's Institute of Optics, NY, costs less than $90,000. *Photo by Andrew Davidhazy.*

READER SURVEY
The editors of *R&D* magazine would like to know more about you. Tell us what you like and don't like about your profession by filling out the Career Satisfaction Survey on page 27. Look for the results in an upcoming issue.

BA ion gage controller, page 65

X-ray surface analysis, page 52



Low-cost lithography, page 44

DEPARTMENTS

5 R&D NEWS IN BRIEF

11 EDITORIAL

15 R&D BUSINESS

20 R&D NEWS OF SCIENCE AND TECHNOLOGY

40 LETTERS

61 READER SERVICE CARD

65 VACUUM TECHNOLOGY

75 PEOPLE, ETC.

79 NEW PRODUCTS

83 R&D PRODUCT CENTER

89 LITERATURE

93 ADVERTISERS INDEX

94 R&D TRENDLETTER

COLUMNS

39 INNOVATIVE NOTEBOOK
Jueneman takes on Aristotelian armchair philosophers who appear in nefarious attempts to influence our considerations toward unthinking dogma in "Another visit with Galileo and the tower in Pisa."

73 PRODUCT DEVELOPMENT
New products most often succeed when technological advantage and customer need cross paths, writes Thomas D. Kuczmarski in "Bridging the gap between R&D and marketing."

87 MANAGEMENT
Industry experts offer advice on getting veteran employes to change their ways, motivating employes to keep customers satisfied, and tying down "loose cannons."

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BUSINESS

Flat equipment growth forecast for next year

AFTER MORE THAN 20% growth in U.S. equipment purchases in the past three years, only a 1.5% increase is forecast for 1990, according to Kermit Baker, director of economics at Cahners Economics.

"The past growth took care of a surge in exports which now seems to be dying out," says Baker.

For 1991, Cahners forecasts a 3.4% increase in equipment purchases. This follows a general cyclical expansion that Cahners forecasts to begin in mid-1990.

The 1991 equipment increase will be split between trade and domestic demands. "However, most of it will be due to domestic demand; the big improvements in trade are behind us," says Baker. □

Mainframe computers take center stage

THE MAINFRAME technical-computing stage has new players in it after recent announcements by U.S. computer makers. Two mainframe heavies, IBM and Control Data, announced model changes and two previously non-mainframe suppliers, Tandem and Digital Equipment, entered the market.

Short-term effects on technical computing are negligible. However, long-term dominance by IBM in this $21 billion (technical computing) market appears to have been shaken.

Tandem, Digital, and Control Data all announced products that outperform IBM's 3090 system, are equal to or less costly than the 3090, and are air-cooled (the 3090 is water-cooled).

Tandem's fault-tolerant Cyclone mainframe, while capable of handling numerical processing, initially will not be targeted at scientific customers, according to a Tandem analyst. Tandem has already shown that it can at least match IBM in the larger transaction-type market at less than half the cost.

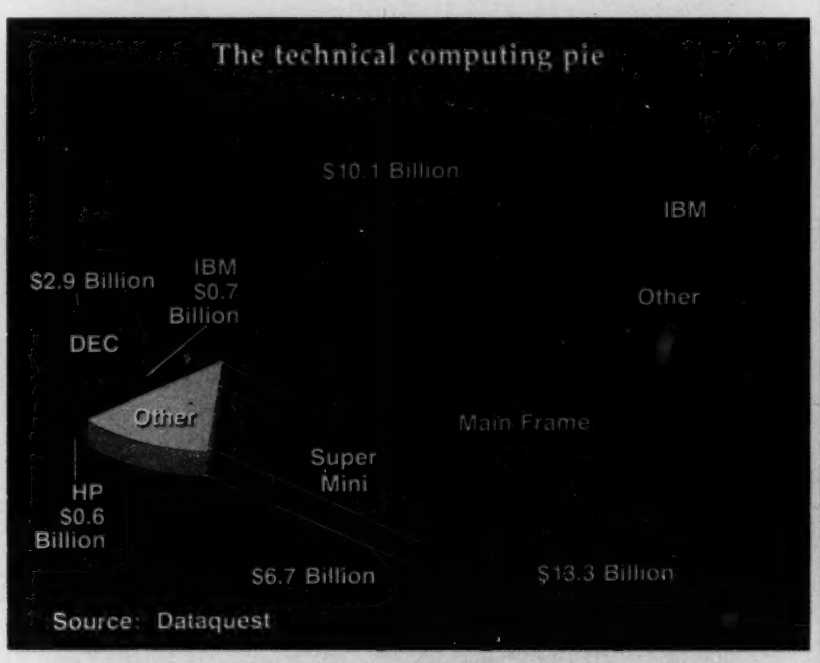
Digital's VAX 9000 will provide more competition for IBM. However, "the 9000 will be an add-on system that will provide existing VAX users with a strong upgrade path," says Doug Crook, an analyst at Dataquest, a Santa Clara, CA, market research firm.

Initially, the 9000 won't displace IBM. "Digital was forced into mainframes because its margins in lower-level computers were being eaten into by competitors," says Crook.

Control Data's Cyber 2000 should compete more directly with IBM. The 2000 is targeted at scientists and engineers with a 30-MFLOPS numerical processing capability. Cray-2 supercomputers are rated at 38 MFLOPS.

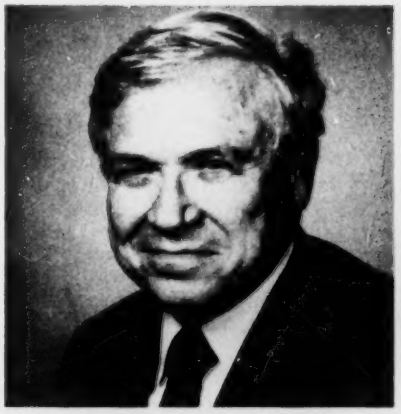
To counter these threats, IBM lowered some 3090 prices—replacements are not expected until 1991.

Users' desire to be software compatible with their existing IBM equipment will keep IBM in the forefront for the near-term. But, when new products start appearing next year, IBM will be in a competitive situation it has not previously been in. —*Tim Studt*



IBM's current large share of the mainframe market will retain its dominance in technical computing despite recent announcements of competitive products.

Form alliances now or forfeit future: Baranson



IITRI's Jack Baranson: Alliances with competitors can shorten R&D times.

COMPANIES that fail to form strategic business alliances with other firms imperil their future prospects," says Jack Baranson, associate director at the Chicago-based Manufacturing Productivity Center of IIT Research Institute.

The rapid pace of technology is telescoping the time cycle so that even large companies with substantial re-

R&D

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ALCOA/Aluminum Company of America	77	152
Allied Signal Engineered Plastics	41	130
Arconium Corporation	26	116
Brookfield Engineering Laboratories Inc.	60	140
Buehler Ltd.	BC	174
Fred S. Carver, Inc.	84	166
Chemical Abstracts Service	51	135
Circle Seal Controls	16	125
DSP Development Corp.	35	124
Danielson Associates	71	146
Dialog Information Services	18	112
Edax International, Inc.	31	119
The Edward Orton Jr. Ceramic Foundation	40	129
Fluid Metering Inc.	83	160
Glassman High Voltage Inc.	78	153
Granville Phillips	64	142
Hauzer Techno Coating	74	149
Heinicke Scientific, Inc.	60	139
IMSL	57	137
†Inmos Ltd.	28B-28C	22
Innotec Group, Inc.	55	136
Insulator Seal Incorporated	32	120
Intergraph Corp.	29	117
IO Tech, Inc.	84	164
Kano Laboratories	85	168
Keithley Instruments Inc.	37	127
Labconco Corp	86	162
Lab-Line Instruments Inc.	83	158
Lake Shore Cryotronics	82	169
Lanier Voice Products	91	171
Larson Electronic Glass	76	151
Leco Corporation	47	132
Leybold Inficon Inc.	69	144
	71	147
MDC Vacuum Products Corp.	63	141
Manville	86	175
Maryland Bank N.A.	19	113
Matheson Gas Products	12	105-108
Melles Griot	34	122
Midland Technologies	83	159
National Design Engineering Show & Conference	88	170
National Electrostatics Corp.	80	155
National Instruments	IBC	172,173
The J.M. Ney Co. Neytech Div.	85	167
Nicolet Analytical Instruments	14	110
Nicolet Test Instruments Div.	38	128
Nikon Inc., Instrument Group	17	111
NordicTrack	81	156
Nupro Company, A Swagelok Company	66	143
Olympus Corporation	49	133
Omega Engineering, Inc.	3	101
Parr Instrument Co.	84	163
Perkin-Elmer Corp.	59	138
Photon Technology Physicon Corp.	70	145
Porous Materials, Inc.	83	161
Quantum Design	4	102
R&D 100	43	
Rolyn Optics	83	157
SLM Instruments, Inc.	34	123
SRI International	85	
Schott America	33	121
Schott Corp.	8-9	103
Sensoray Co., Inc.	24	
Shortridge Instruments, Inc.	16	126
Stat-Ease Inc.	76	150
Stellar Software	80	154
Surcom Associates, Inc.	84	165
SYSTAT	42	131
Taylor-Wharton	10	104
Thermolyne Corp.	50	176-179
Vaisala	30	118
Varian Associates	23	114
	25	115
Veriflo	72	148
Wyko Corp.	13	109

*Domestic
†Foreign

CIRCULATION

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